PATENT COOPERATION TRE. TY

To:	**PCT**
see form PCT/ISA/220	**WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY** (PCT Rule 43*bis*.1)

	Date of mailing *(day/month/year)* see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference	**FOR FURTHER ACTION**
see form PCT/ISA/220	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2004/017225	12.11.2004	31.03.2004

International Patent Classification (IPC) or both national classification and IPC
G06F9/50, G06F9/46, G06F11/00

Applicant
TOYOTA JIDOSHA KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I   Basis of the opinion
- ☐ Box No. II   Priority
- ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV   Lack of unity of invention
- ☒ Box No. V   Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI   Certain documents cited
- ☐ Box No. VII   Certain defects in the international application
- ☐ Box No. VIII   Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Krischer, S Telephone No. +49 89 2399-7484

| **Box No. I   Basis of the opinion** |

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

    ☐   This opinion has been established on the basis of a translation from the original language into the following language   , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

    a. type of material:

    ☐   a sequence listing

    ☐   table(s) related to the sequence listing

    b. format of material:

    ☐   in written format

    ☐   in computer readable form

    c. time of filing/furnishing:

    ☐   contained in the international application as filed.

    ☐   filed together with the international application in computer readable form.

    ☐   furnished subsequently to this Authority for the purposes of search.

3. ☐   In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**Box No. V   Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or
industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes:	Claims	1-4
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-4
Industrial applicability (IA)	Yes:	Claims	1-4
	No:	Claims	

2. Citations and explanations

   see separate sheet

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)

International application No.

PCT/JP2004/017225

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1   **Documents**

Reference is made to the following documents:

D1   RUSSINOVICH, M: "Inside the Windows NT Scheduler, Part 2", pages 1-6, WEBSITE OF WINDOWS-IT-PRO MAGAZINE, [Online] August 1997 (1997-08), XP002318776; Retrieved from the Internet: URL:http://www.windowsitpro.com/Articles/P rint.cfm?ArticleID=303> [retrieved on 2005-02-22]

2   **Inventiveness of claim 1**

2.1   The document D1 is regarded as being the **closest prior art** to the subject-matter of the claim, and **discloses** (the references in parentheses applying to this document):

a task execution system including at least two processors, comprising:
        a task management table registered with an associated relationship between at least a task, a main execution processor for executing the task and an in-charge-of-stoppage processor for executing the task when said main execution processor stops (for the "main execution processor" see the "ideal processor" in page 2, paragraph 10, last line: "A programmer can assign an ideal processor to a thread."; this "ideal processor" is listed in the "hard-affinity" table of paragraph 8, line 2: "The hard affinity of a thread is essentially a list of processors that the thread can execute on"; the "in-charge-of-stoppage processor" is another processor listed in the hard-affinity table);
        a selecting unit selecting an executable task from among tasks registered in said task management table (page 2, paragraph 8, line 3: "the scheduler will never schedule a thread on a nonlisted processor", i.e. not listed in the hard-affinity table);
        a checking unit checking, if a processor other than said processor trying to execute the selected task is registered as said main execution processor for the

selected task, a *busy* state of said processor registered as said main execution processor (page 2, paragraph 11, line 1: "The scheduler tries to schedule a thread on its ideal CPU, but if that CPU is busy with a higher-priority thread, the scheduler looks at other processors in the thread's hard-affinity list."); and

an executing unit executing the selected task if said processor registered as said main execution processor remains *busy* (a second processor in the hard-affinity table executes the task if the ideal processor is busy).

2.2 Thus, the **difference** between the subject-matter of the claim and that of D1 is that the second processor is used only if the first processor has stopped, and not already if the first processor is busy with a higher-priority task as in D1.

2.3 The **problem** to be solved by the present invention may therefore be regarded as assuring the execution of a task in case of a stopped first processor (the "main execution processor") assigned to a task.

2.4 The **solution** proposed cannot be considered as involving an inventive step since the solution merely consists in *weakening* the condition that determines when the task migrates to the second processor of the hard-affinity table: In D1, the first processor being busy with a higher-priority task is already enough for the scheduler to migrate the task. In the claim, the overall performance of the first processor must have decreased to zero (the processor being "completely busy", i.e. stopped), before the scheduler migrates the task. A skilled person obviously would weaken the migration condition of D1 if the problem of assuring the execution of a task only for a *stopped* first processor had been posed, while neglecting the performance of the whole system.

2.5 Therefore, the subject-matter of this claim is **not inventive** in the sense of Article 33(3) PCT.

3   **Inventiveness of independent system claim 2**

Since the second independent system claims 2 merely contains two unspecific "judging units" in addition to system claim 1 without disclosing their functioning or

their internal structure, the objections concerning lack of inventive step of claim 1 apply accordingly to this claim.

4   **Inventiveness of independent method and program claims 3 and 4**

Since method and program claims 3 and 4 only contain steps and means that correspond to the features of system claim 1, the objections concerning lack of inventive step of claim 1 apply accordingly to these claims.